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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : C07D 295/15, A61K 31/495

A1

(11) International Publication Number: **WO 99/64407**

(43) International Publication Date: 16 December 1999 (16.12.99)

(21) International Application Number: PCT/EP98/03431

(22) International Filing Date: 8 June 1998 (08.06.98)

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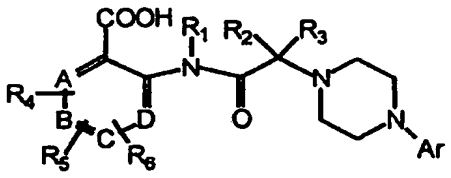
(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

Published
With international search report.

(54) Title: α–(1–PIPERAZINYL)ACETAMIDO ARENECARBOXYLIC ACID DERIVATIVES AS ANTIDIABETIC AGENTS



(I)

(57) Abstract

The invention relates to compounds of general formula (I). These compounds are useful in the treatment of diabetes.

Applicants: Arlindo Castelhano et al.
Serial No.: 10/718,280
Filed: November 20, 2003
Exhibit 2

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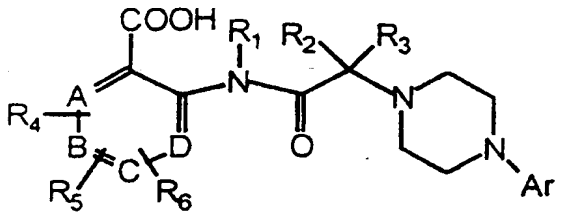
α-(1-PIPERAZINYL)ACETAMIDO ARENECARBOXYLIC ACID DERIVATIVES AS ANTIDIABETIC AGENTS

The present invention relates to new α-(1-piperazinyl)acetamido arenecarboxylic acid derivatives which are useful in the treatment of diabetes.

The subject of the present invention is thus compounds of general formula (I):



(I)

in which:

Ar is selected from

- a mono-, bi- or tricyclic aryl group having from 6 to 14 carbon atoms,

- a heteroaromatic group selected from the pyridyl, pyrimidinyl, pyrrolyl, furyl, thienyl, quinolyl, indolyl, benzothienyl, benzofuryl, benzopyranyl, benzothiopyranyl, dibenzofuryl, carbazolyl and benzothiazinyl groups,

it being possible for the Ar group to carry 1 to 3 substituents selected from a C_1-C_8 alkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, C_1-C_8 alkoxy, (C_3-C_8)cycloalkyloxy(C_1-C_6)alkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkoxy(C_1-C_6)alkyl, (C_3-C_8)cycloalkyloxy, (C_3-C_8)cycloalkyl(C_1C_6)alkoxy, (C_1-C_6)alkoxy(C_1-C_6)alkyl, C_6-C_{14} aryl, C_6-C_{14} heteroaryl, (C_6-C_{14})heteroaryl(C_1-C_6)alkyl, (C_6-C_{14})aryl(C_1-C_6)alkyl, (C_6-C_{14})aryl(C_1-C_6)alkyl(C_6-C_{14})aryl, (C_6-C_{14})aryloxy, (C_6-C_{14})aryloxy(C_1-C_6)alkyl, (C_6-C_{14})aryl(C_1-C_6)alkyloxy or (C_6-C_{14})aryl(C_1-C_6)alkyloxy(C_1-C_6)alkyl group, a halogen, a trifluoromethyl, trifluoromethoxy, cyano, hydroxyl, nitro, amino, carboxyl, (C_1-C_6)alkoxycarbonyl, carbamoyl, (C_1-C_8)alkylthio, (C_1-C_8)alkylsulphinyl, (C_1-C_8)alkylsulphonyl, sulphoamino, (C_1-

C_8)alkylsulphonylamino, sulphamoyl or (C_1-C_8)alkylcarbonylamino group, or two of these substituents forming a methylenedioxy group,

the 4-carboxyphenyl and substituted 4-carboxyphenyl groups being excluded from the definition of Ar,

R_1, R_2 and R_3 are selected, independently of one another, from:

- a hydrogen atom,
- a C_1-C_8 alkyl or (C_1-C_6)alkoxy(C_1-C_6)alkyl group,
- a cycloalkyl group containing from 3 to 8 carbon atoms, a (C_3-C_8)cycloalkyl(C_1-C_6)alkyl group or a (C_3-C_8)cycloalkyloxy(C_1-C_6)alkyl or (C_3-C_8)cycloalkyl(C_1-C_6)alkoxy(C_1-C_6)alkyl group,
- a C_6-C_{14} aryl, C_6-C_{14} heteroaryl, (C_6-C_{14})heteroaryl(C_1-C_6)alkyl, (C_6-C_{14})aryl(C_1-C_6)alkyl, (C_6-C_{14})aryl(C_1-C_6)alkyl(C_6-C_{14})aryl, (C_6-C_{14})aryl(C_1-C_6)-alkoxy(C_1-C_6)alkyl or (C_6-C_{14})aryloxy(C_1-C_6)alkyl group,

A, B, C and D are =CH- groups, it being possible for one or two of them also to be a nitrogen atom,

R_4, R_5 and R_6 are selected, independently of one another, from:

- a hydrogen atom,
- a C_1-C_8 alkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, C_1-C_8 alkoxy, (C_3-C_8)cycloalkyloxy(C_1-C_6)alkyl, (C_3-C_8)cycloalkyloxy, (C_3-C_8)cycloalkyl(C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl(C_1-C_6)alkoxy(C_1-C_6)alkyl, (C_1-C_6)alkoxy(C_1-C_6)alkyl, C_6-C_{14} aryl, (C_6-C_{14})aryl(C_1-C_6)alkyl, (C_6-C_{14})aryl(C_1-C_6)alkyl(C_6-C_{14})aryl, (C_6-C_{14})aryloxy, (C_6-C_{14})aryloxy(C_1-C_6)alkyl, (C_6-C_{14})aryl(C_1-C_6)alkoxy or (C_6-C_{14})aryl(C_1-C_6)alkyloxy(C_1-C_6)alkyl group, a halogen or a trifluoromethyl, trifluoromethoxy, cyano, carboxyl, hydroxyl, nitro, amino, (C_1-C_6)alkoxycarbonyl, carbamoyl, (C_1-C_6)alkylthio, (C_1-C_8)alkylsulphinyl, (C_1-C_8)alkylsulphonyl, sulphoamino, (C_1-C_8)alkylsulphonylamino, sulphamoyl or (C_1-C_8)alkylcarbonylamino group, it being possible for two of these groups to form a methylenedioxy group or a phenyl ring condensed with the ring to which they are attached,

it being possible for the various aryl groups to be themselves substituted by 1 to 3 substituents selected from a C_1-C_8 alkyl or C_1-C_8 alkoxy group, a halogen or a trifluoromethyl, trifluoromethoxy, hydroxyl, nitro and amino group,

their solvates and their pharmaceutically acceptable salts.

Mention may be made, as an example of the aryl group, of the phenyl, α-naphthyl, β-naphthyl and fluorenyl groups.

The C_1-C_8 alkyl groups can be linear or branched. Mention may be made, as examples, of the methyl, ethyl, propyl, isopropyl, butyl, isobutyl, tert-butyl and pentyl groups.

The C_1-C_8 alkoxy groups can likewise be linear or branched. Mention may be made, as examples, of the methoxy, ethoxy, propoxy, isopropoxy, butoxy and isobutoxy groups.

The halogens can be selected from fluorine, chlorine, bromine and iodine.

The heteroaryl groups in the definition of R_1, R_2 and R_3 may be defined in particular as defined for the heteroaromatic groups in the definition of Ar.

The invention also relates to the tautomeric forms and to the enantiomers, diastereoisomers and epimers of the compounds of general formula (I).

The compounds of general formula (I) possess a carboxylic acid functional group and can be salified, then existing in the form of salts with bases.

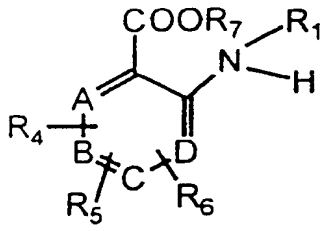
Examples of salts with bases of the compounds of general formula (I) include the pharmacologically acceptable salts, such as the sodium salts, potassium salts, calcium salts and other salts of the same type.

The compounds of general formula (I) can also be salified with amines in order to form pharmaceutically acceptable salts. By way of example, the compounds of general formula (I) could be salified with glucamine, N-methylglucamine, N,N-dimethylglucamine, ethanolamine, morpholine, N-methylmorpholine or lysine.

The compounds of general formula (I) possess basic nitrogen atoms and can be monosalified or disalified with inorganic or organic acids. Examples of salts with acids of the compounds of general formula (I) include the pharmaceutically acceptable salts, such as, and non-exhaustively, the hydrochloride, the hydrobromide, the sulphate, the succinate, maleate, fumarate,

malate or tartrate and the sulphonates, such as the methanesulphonate, the benzenesulphonate or the toluenesulphonate.

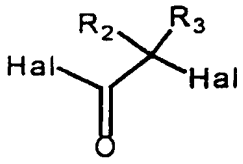
The invention also relates to a process for the preparation of the compounds of general formula (I). A preparation process according to the invention comprises the reaction of an aromatic amine of general formula (II):



(II)

in which A, B, C, D, R_1, R_4, R_5 and R_6 are as defined above and R_7 is a hydrogen atom, a C_1-C_6 alkyl group or a benzyl group,

with a haloacyl halide of general formula (III):

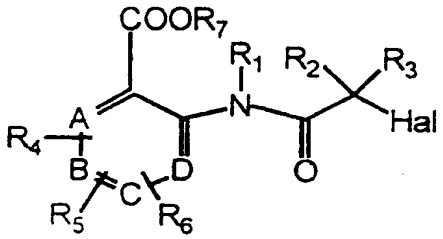


(III)

in which R_2 and R_3 are as defined above,

Hal represents a chlorine or bromine atom,

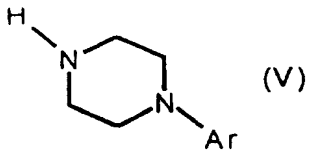
in order to form a compound of general formula (IV):



(IV)

in which A, B, C, D, R_1, R_2, R_3, R_4, R_5, R_6, R_7 and Hal are as defined above,

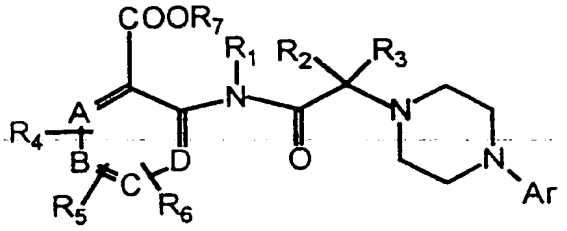
and the reaction of the compound of general formula (IV) with a compound of general formula (V):



(V)

in which Ar is as defined above,

in the presence of a basic agent, such as triethylamine, in order to form the compound of general formula (VI):



(VI)

in which Ar, A, B, C, D, R_1, R_2, R_3, R_4, R_5, R_6 and R_7 are as defined above.

In the case where R_7 is an alkyl group, the compound of general formula (VI) can be hydrolysed by conventional acidic or basic means in order to give the compound of general formula (I).

In the case where R_7 is a benzyl group, the compound of general formula (VI) can be hydrogenolysed in the presence of a catalyst, such as palladium-on-charcoal, in order to give the compound of general formula (I).

The compounds of formulae (II) and (V) are known compounds or can be prepared according to known processes.

Thus, compounds of formula (II) are described in Organic Preparation and Procedures International, 13, 189, 1981.

The compounds of formula (V) can be prepared as described by R. Ratouis et al. (J. Med. Chem., 8, 104, 1965) or by Prelog et al. (Collection Czechoslov. Chem. Communications, 6, 211, 1934).

By way of example, the compound (VI), in which R_7 is an alkyl group, can by hydrolysed in the presence of a basic agent, such as dilute sodium hydroxide.

The enantiomers of the compounds of formula (I) can be separated by successive recrystallization of the salt of the acid (I) with an optically active base in solvents such as acetone, ethyl acetate or isopropanol and then displacement from the salt into an optically active acid by an inorganic or organic acid, according to a conventional method.

The compounds according to the present invention can be used in the treatment of diabetes, in particular of non-insulin-dependent diabetes, because of their hypoglycaemic effect and of their absence of toxicity at the active doses.

Another subject of the present invention is thus pharmaceutical compositions comprising an effective amount of a compound according to the invention.

The pharmaceutical compositions according to the invention can be presented in forms intended for parenteral, oral, rectal, permucosal or percutaneous administration.

They will thus be presented in the form of injectable solutions or suspensions, or multi-dose containers, in the form of uncoated or coated tablets, of sugar-coated tablets, of capsules, including hard gelatin capsules, of pills, of cachets, of powders, of suppositories or of rectal capsules, of solutions or of suspensions, for percutaneous use in a polar solvent or for permucosal use.

The excipients which are suitable for such administrations are derivatives of cellulose or microcrystalline cellulose, alkaline-earth metal carbonates, magnesium phosphate, starches, modified starches or lactose for the solid forms.

Cocoa butter or polyethylene glycol stearates are the preferred excipients for rectal use.

Water, aqueous solutions, physiological solution or isotonic solutions are the most conveniently used vehicles for parenteral use.

The dosage can vary within wide limits depending on the therapeutic indication and the administration route, as well as the age and weight of the patient.

The following examples illustrate the preparation of the compounds of formula (I) and of the intermediates of formulae (II) and (IV).

A - Example of the preparation of a compound of formula (II).

Preparation of methyl 2-cyclohexylmethylamino-5-methoxybenzoate

17.6 g of methyl 5-methoxyanthranilate, 11.8 ml of cyclohexanecarboxaldehyde and 2 g of 10% palladium-on-charcoal (50% water) are charged to 200 ml of methanol in a 1 litre hydrogenation apparatus.

The apparatus is placed under a hydrogen atmosphere and agitated at room temperature for 3 hours.

300 ml of dichloromethane are added, the palladium-on-charcoal is separated off by filtration and the filtrate obtained is concentrated under vacuum.

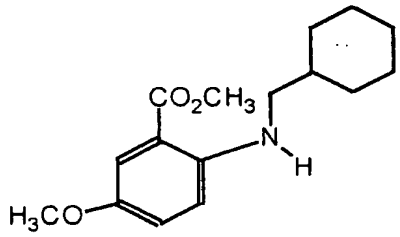
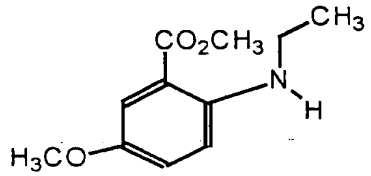
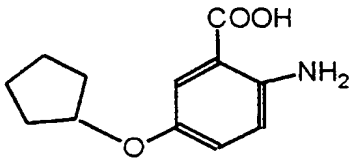
The oil obtained crystallizes from an ethanol (200 ml) and water (50 ml) mixture to give 25.4 g of a yellow solid which melts at 58-60°C.

IR: (KBr) 1683 cm^{-1} (C=O), 1528 cm^{-1} (C=O)

^1H NMR: ($CDCl_3$, 200 MHz) δ ppm: 1.06-1.64 (11H, m, cyclohexyl), 2.93 (2H, t, CH_2), 3.68 (3H, s, OCH_3), 3.78 (3H, s, OCH_3), 6.56 (1H, d, phenyl proton), 6.96 (1H, dd, phenyl proton), 7.34 (2H, d + s, phenyl proton + NH).

The formulae and characteristics of the compounds of formula (II) have been combined in Table I.

TABLE I

Compound	Structure	
1		M.p. in °C (Köfler) 58-60
2		^{1}H NMR (200 MHz) $CDCl_3$ δ PPM 1.28 (t. 3H) 3.20 (q, 2H) 3.77 (s, 3H) Oil 3.88 (s,3H) 6.71 (d, 1H) 7.09 (dd, 1H) 7.28 (s, 1H) 7.50 (d, 1H)
3		M.p. in °C (Köfler) 147-149

B - Example of the preparation of a compound of formula (IV).

Preparation of 4-chloro-2-(chloroacetamido)benzoic acid

25.5 ml of chloroacetyl chloride are added dropwise with stirring to 50 g of 2-amino-4-chlorobenzoic acid in 600 ml of dioxane, the reaction mixture being maintained at 20°C.

Stirring is then maintained for 2 hours at room temperature and then 1200 ml of water are added. The desired product precipitates, the mixture is stirred for one hour and then filtered and the solid obtained is washed with water.

After drying, 60.7 g of 4-chloro-2-(chloroacetamido)benzoic acid are obtained, the melting point of which is 194-196°C.

IR: 1676 cm^{-1} (C=O)

^1H NMR: (d_6-DMSO, 200 MHz) δ ppm: 4.30 (2H, s, CH_2), 7.1 (1H, d, phenyl proton), 7.7 (1H, d, phenyl proton), 8.5 (1H, s, phenyl proton), 11.75 (1H, s, NH), 13.90 (1H, broad s, COOH).

The formulae and characteristics of the compounds of formula (IV) have been combined in Table II.

TABLE II

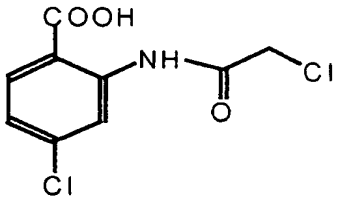
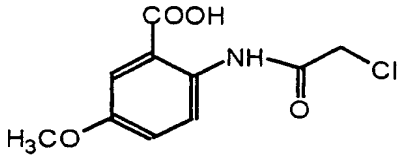
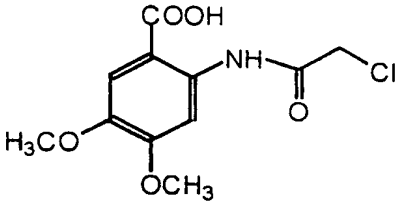
Compound	Structure	M.p. in ° C (Köfler)
1		194-196
2		182-184
3		236-238

TABLE II (continuation)

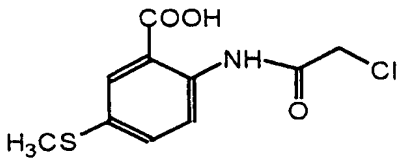
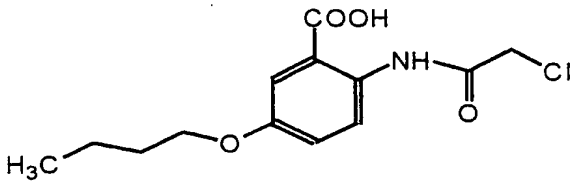
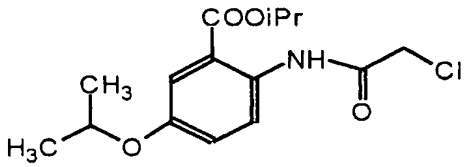
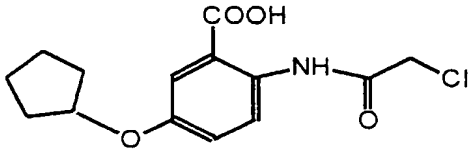
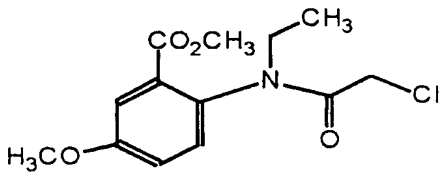
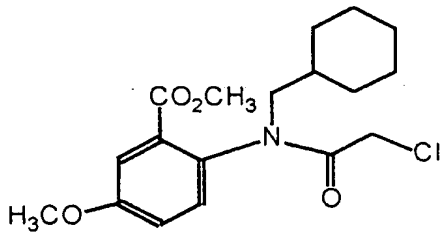
Compound	Structure	M.p. in ° C (Köfler)
4		180-182
5		155-157
6		83-85
7		217-219

TABLE II (continuation)

Compound	Structure	^{1}H NMR (200 MHz) $CDCl_3$ δ ppm
8		Oil 0.99 (t, 3H) 3.35 (m, 1H) 3.63 (d, 2H) 3.89 (s+m,7H) 7.12 (m, 2H) 7.40 (d, 1H)
9		Oil 1.05 (t, 3H) 1.57 (m, 6H) 2.81 (dd, 1H) 3.66 (s, 2H) 3.81 (s, 6H) 3.88 (dd, 1H) 7.13 (m, 2H) 7.38 (d, 1H)

C - Example of the preparation of a compound of formula (II)

Preparation of 4-chloro-2-{[4-(2-methoxyphenyl)-1-piperazinyl]acetamido} benzoic acid

15 g of 4-chloro-2-(chloroacetamido)benzoic acid are added, with stirring and at room temperature, to 11.6 g of 1-(2-methoxyphenyl)piperazine and 17 ml of triethylamine in 120 ml of DMF.

The reaction mixture is kept stirring for 48 hours at room temperature and then 500 ml of water are added. Extraction is carried out with 3 × 300 ml of dichloromethane. The solvent is evaporated under vacuum and the solid thus obtained is taken up again in 300 ml of a 2N aqueous sodium hydroxide solution. The solution is washed with 3 × 200 ml of diethyl ether and the aqueous phase is then acidified with acetic acid.

A solid crystallizes to give, after filtration, 22.5 g of crude product. After recrystallization from dioxane, 21.1 g of 4-chloro-2-{[4-(2-methoxyphenyl)-

1-piperazinyl]acetamido}benzoic acid are obtained in the form of a white solid which melts at 218-220°C.

IR: 1699 cm^{-1} (C=O), 1673 cm^{-1} (C=O)

^1H NMR: (CF_3COOD), δ ppm: 4.25 (3H, s, OCH_3), 4.65 (8H, broad s, 4 CH_2), 4.95 (2H, s, CH_2), 7.5 (2H, m, phenyl protons), 7.6 (1H, d, phenyl proton), 7.90 (2H, m, phenyl protons), 8.50 (1H, d, phenyl proton), 8.75 (1H, s, phenyl proton).

D - Alternative form of the preparation of a compound of formula (I)

Preparation of 2-{[4-(4-fluorophenyl)-1-piperazinyl]-acetamido}-4,5-(methylenedioxy)benzoic acid

15 g of 2-(chloroacetamido)-4,5-(methylenedioxy)benzoic acid are added, with stirring and at room temperature, to 10.5 g of 1-(4-fluorophenyl)piperazine and 16.2 ml of triethylamine in 150 ml of DMF.

The reaction mixture is kept stirring for 48 hours at room temperature.

3.5 ml of acetic acid are added and 150 ml of water are slowly added. The acid crystallizes and is diluted with 300 ml of water. The mixture is stirred for 30 minutes and filtered and the solid obtained is washed with water.

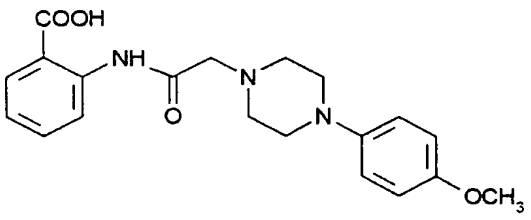
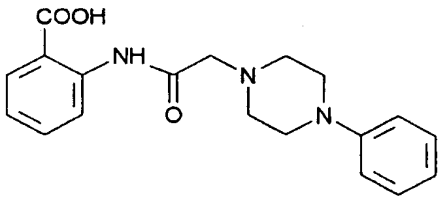
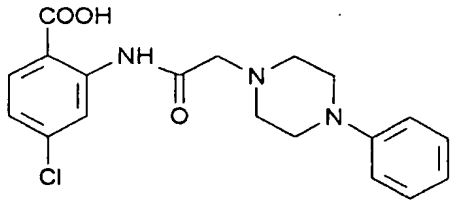
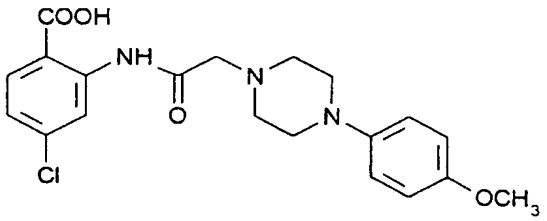
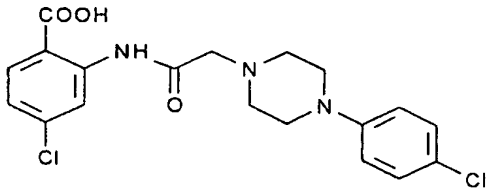
After recrystallization from a dioxane/DMF mixture, 14.9 g of 2-{[4-(4-fluorophenyl)-1-piperazinyl]acetamido}-4,5-(methylenedioxy)benzoic acid are obtained, which product melts at 254-256°C.

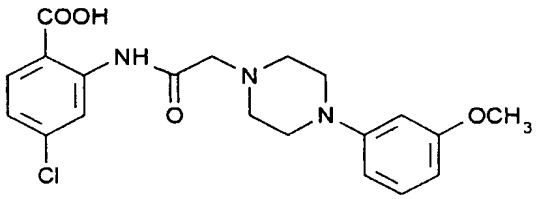
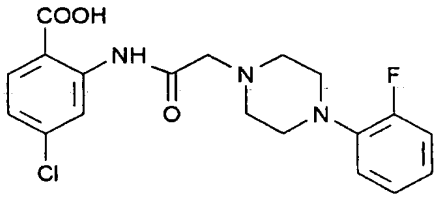
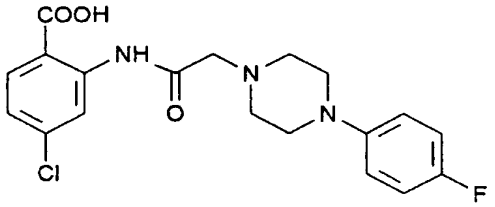
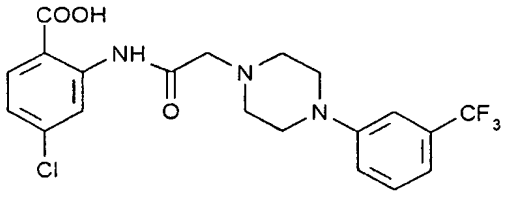
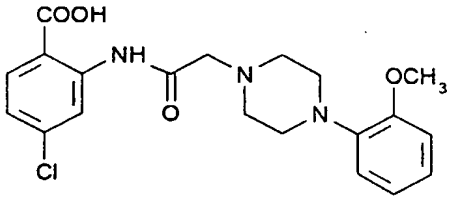
IR (KBr): 1654 cm^{-1} (C=O)

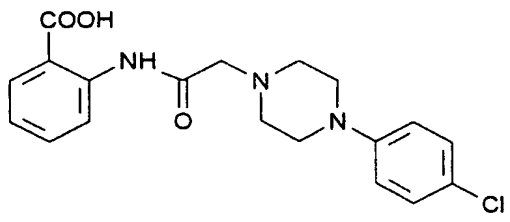
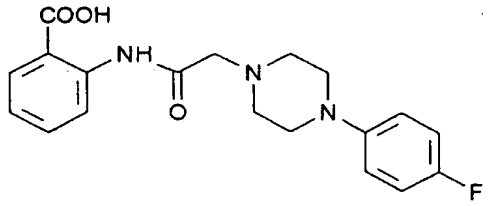
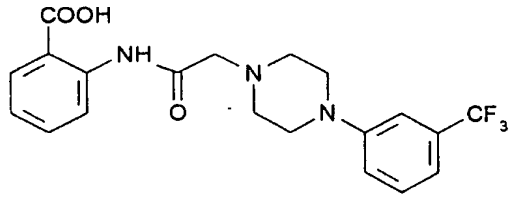
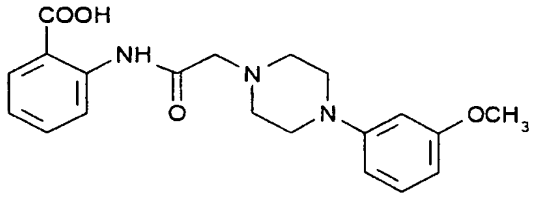
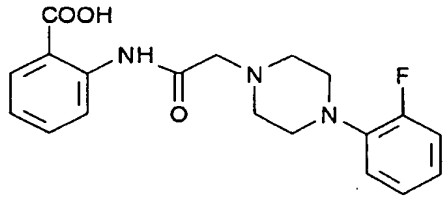
^1H NMR: (CF_3COOD, 200 MHz) δ ppm: 4.40 (8H, s, piperazinyl), 4.67 (2H, s, CH_2), 6.05 (2H, s, O-CH_2-O), 7.30 (2H, t, phenyl proton), 7.65 (3H, m, phenyl proton), 7.90 (1H, s, phenyl proton).

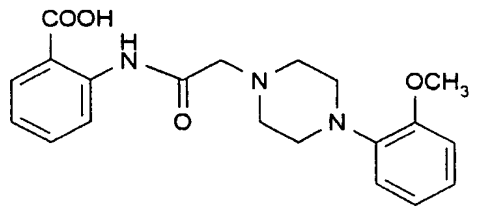
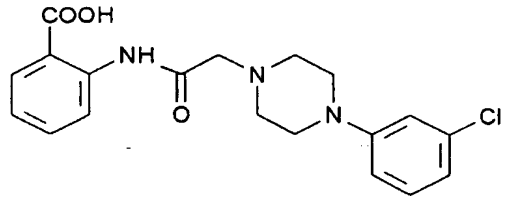
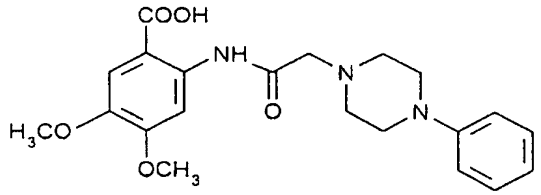
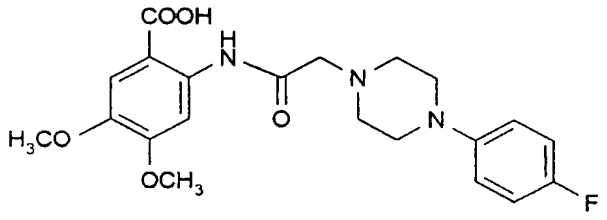
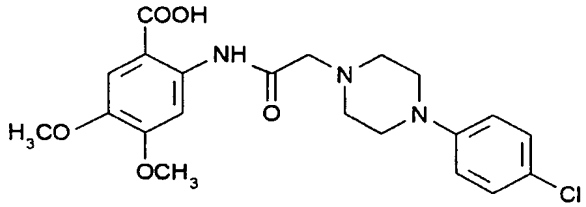
The formulae and characteristics of compounds of formula (I) have been combined in Table III.

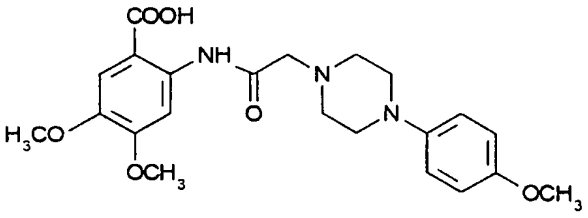
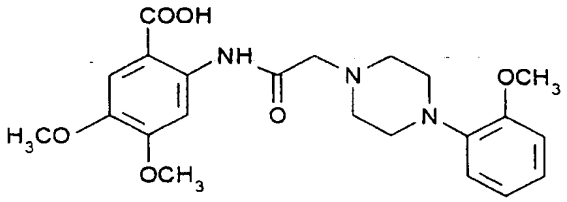
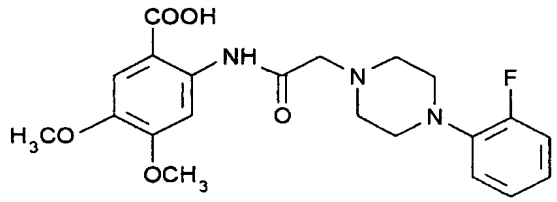
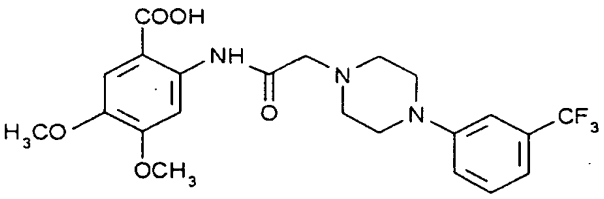
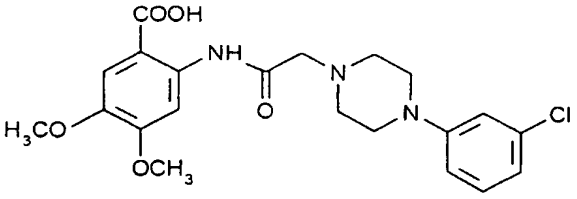
TABLE III

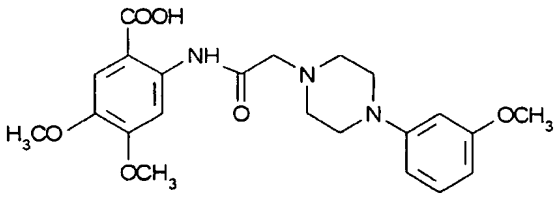
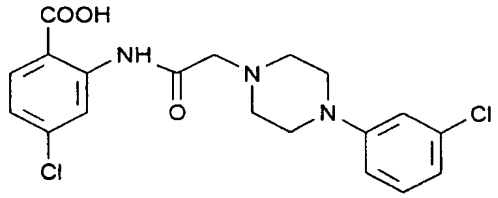
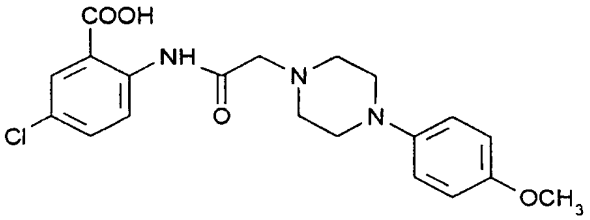
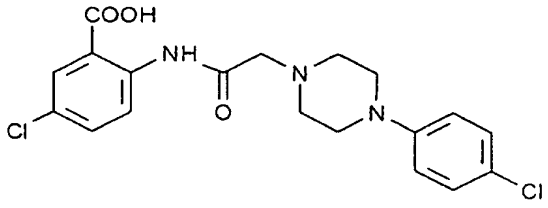
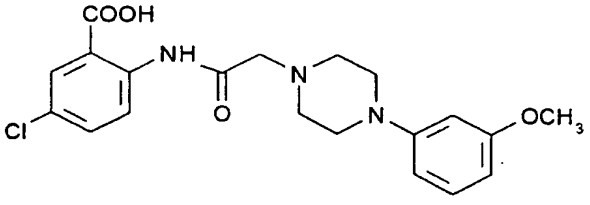
Com-pound	Structure	M.p. in °C (Köfler)	^{1}H NMR (200 MHz) δ ppm
1		185-187	d6-DMSO 2.60 (s,4H) 3.10 (s,4H) 3.20(s,2H) 3.70(s,3H) 6.80(q,4H) 7.10(t,1H) 7.55(t,1H) 8(d,1H) 8.7(d,1H)
2		233-235	CF_3COOD 4.25(s,8H) 4.65(s,2H) 7.30(t,1H) 7.55(s,5H) 7.70(t,1H) 8.25(m,2H)
3		248-250	CF_3COOD 4.25(s,8H) 4.55(s,2H) 7.10(d,1H) 7.50(s,5H) 8.05(d,1H) 8.30(s,1H)
4		241-243	CF_3COOD 4(s,3H) 4.5(s,8H) 4.8(s,2H) 7.2(d,2H) 7.4(d,1H) 7.65(d,2H) 8.25(d,1H) 8.60(s,1H)
5		> 265	CF_3COOD 4.20(s,8H) 4.62(s,2H) 7.20(d,1H) 7.55(s,4H) 8.10(d,1H) 8.35(s,1H)

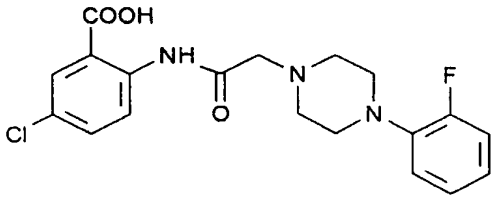
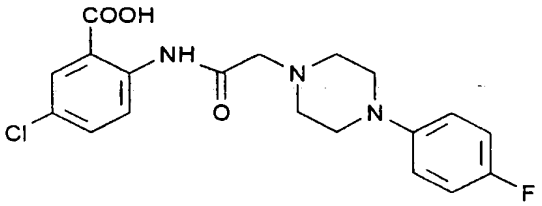
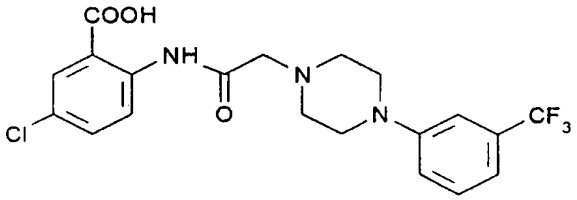
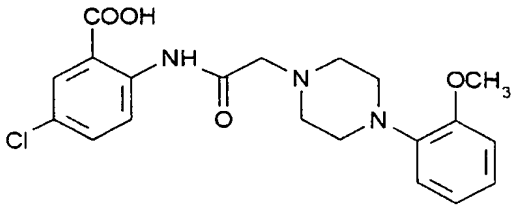
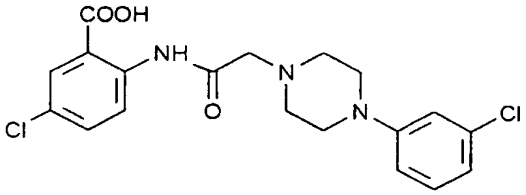
Com-pound	Structure	M.p. in °C (Köfler)	^{1}H NMR (200 MHZ) δ ppm
6		199-201	CF_3COOD 3.8(s,3H) 4.25(s,8H) 4.60(s,2H) 7.20(m,4H) 7.5(m,1H) 8.15(d,1H) 8.40(s,1H)
7		238-240	CF_3COOD 4.60(d,8H) 4.90(s,2H) 7.50(m,3H) 7.85(m,2H) 8.35(d,1H) 8.65(s,1H)
8		244-246	CF_3COOD 4.10(s,8H) 4.45(s,2H) 7.05(d,3H) 7.45(m,2H) 7.95(d,1H) 8.20(s,1H)
9		191-193	CF_3COOD 4.25(d,8H) 4.60(s,2H) 7.15(d,1H) 7.75(m,4H) 8.10(d,1H) 8.30(s,1H)
10		218-220	CF_3COOD 4.25(s,3H) 4.65(s,8H) 4.95(s,2H) 7.5(m,2H) 7.6(d,1H) 7.9(m,2H) 8.5(d,1H) 8.75(s,1H)

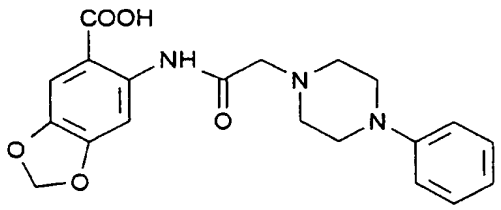
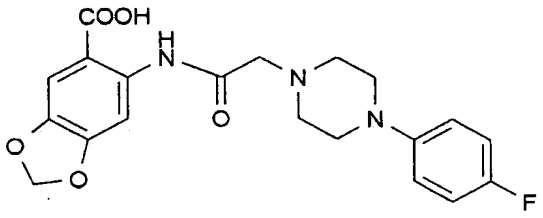
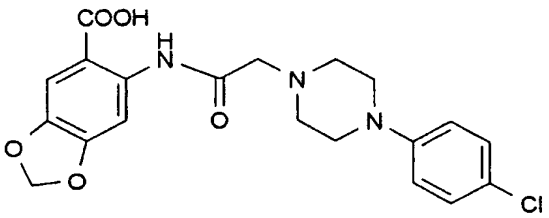
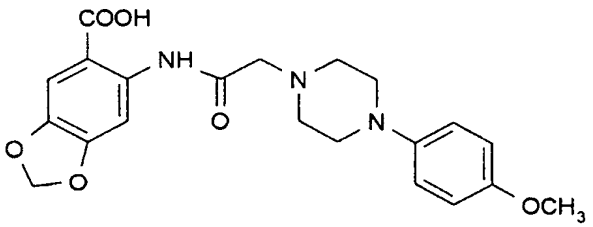
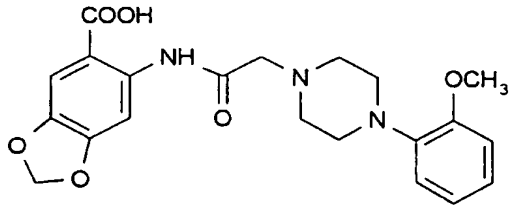
Com-pound	Structure	M.p. in °C (Köfler)	^{1}H NMR (200 MHZ) δ ppm
11		260-262	CF_3COOD 4.3(s,8H) 4.7(s,2H) 7.25(t,1H) 7.55(s,4H) 7.70(t,1H) 8.25(m,2H)
12		249-251	CF_3COOD 4.2(s,8H) 4.6(s,2H) 7.2(m,3H) 7.6(m,3H) 8.15(m,2H)
13		174-176	$CDCl_3$ 2.65(s,4H) 3.10(s,2H) 3.20(s,4H) 7,00(m,7H) 8.65(d,1H) 10,00(s,1H) 11.8(s,1H)
14		190-192	CF_3COOD 3.85(s,3H) 4.30(s,8H) 4.75(s,2H) 7.5(m,6H) 8.15(t,2H)
15		169-171	$CDCl_3$ 2.74(s,3H) 3.15(s,8H) 3.20(s,2H) 6.80(m,5H) 7.5(t,1H) 7.75(d,1H) 8.80(d,1H) 11.45(s,1H) 12.00(s,1H)

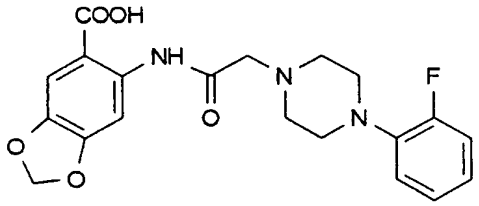
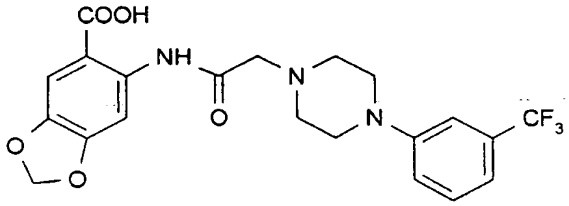
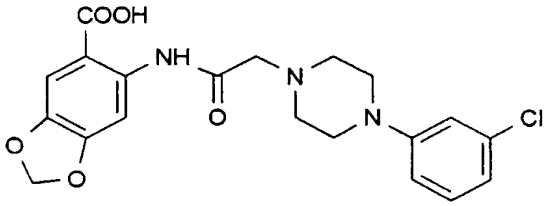
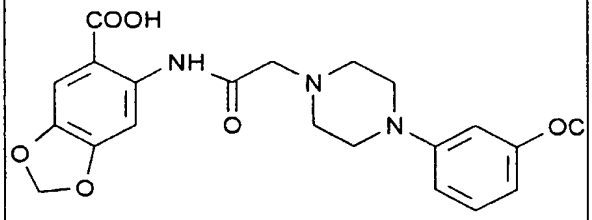
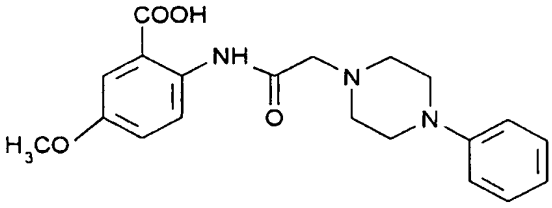
Com-pound	Structure	M.p. in °C (Köfler)	^{1}H NMR (200 MHZ) δ ppm
16		217-219	$CDCl_3$ 3.5(s,3H) 3.75(s,8H) 4.29(s,2H) 6.65(d,2H) 6.85(t,1H) 7.10(m,3H) 7.75(t,2H)
17		190-192	CF_3COOD 3.75(s,8H) 4.15(s,2H) 6.75(m,1H) 7.00(m,5H) 7.60(m,2H)
18		>265	CF_3COOD 3.65(s,6H) 4.15(s,8H) 4.5(s,2H) 7.55(s,5H) 7.65(s,1H) 7.85(s,1H)
19		>265	CF_3COOD 3.75(s,6H) 4.15(s,8H) 4.50(s,2H) 7.05(t,2H) 7.42(m,2H) 7.55(s,1H) 7.85(s,1H)
20		>265	CF_3COOD 3.80(s,6H) 4.15(s,8H) 4.50(s,2H) 7.40(s,4H) 7.60(s,1H) 7.90(s,1H)

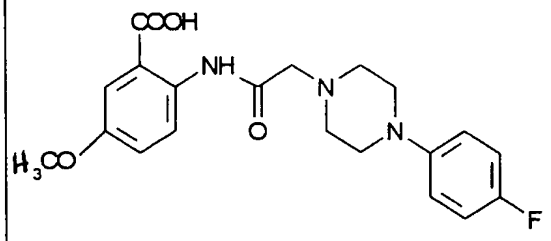
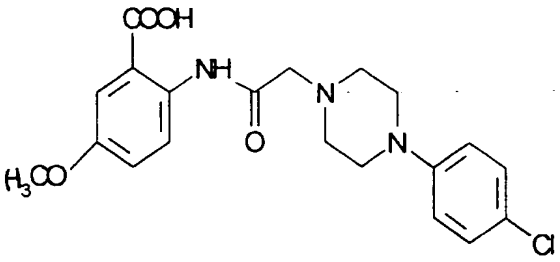
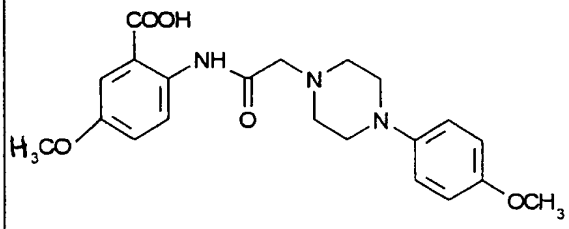
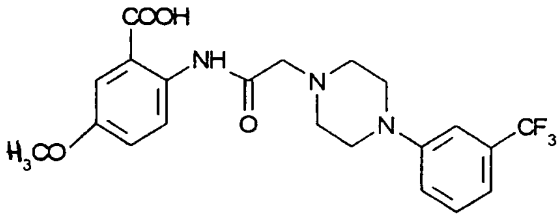
Com-pound	Structure	M.p. in °C (Köfler)	^{1}H NMR (200 MHZ) δ ppm
21		246-248	CF_3COOD 3.75(s,3H) 3.85(s,6H) 4.15(s,8H) 4.50(s,2H) 6.90(d,2H) 7.40(d,2H) 7.60(s,1H) 7.95(s,1H)
22		244-246	CF_3COOD 3.80(s,9H) 4.25(s,8H) 4.50(s,2H) 7,00(d,2H) 7.40(d,2H) 7.60(s,1H) 7.95(s,1H)
23		245-247	CF_3COOD 3.80(s,6H) 4.20 +4.35(2s,8H) 4.50(s,2H) 7.20(q,2H) 7.50(m,3H) 7.95(s,1H)
24		255-257	CF_3COOD 3.75(s,6H) 4.10+4.20(2s,8H) 4.50(s,2H) 7.60(m,5H) 7.85(s,1H)
25		>265	CF_3COOD 3.80(s,6H) 4.15(s,8H) 4.50(s,2H) 7.35(m,4H) 7.55(s,1H) 8.85(s,1H)

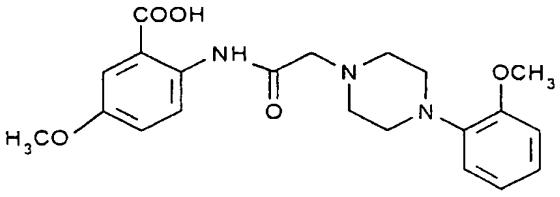
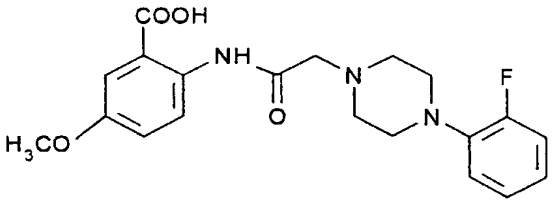
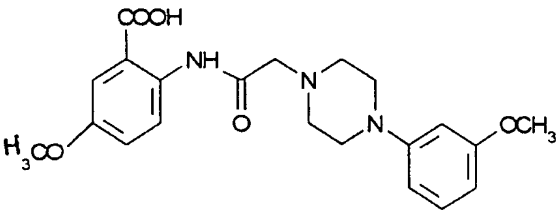
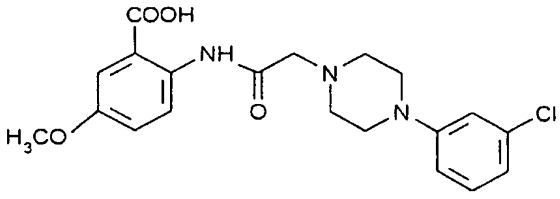
Com-pound	Structure	M.p. in °C (Köfler)	^{1}H NMR (200 MHZ) δ ppm
26		255-257	CF_3COOD 3.70(s,3H) 3.85(s,6H) 4.22(s,8H) 4.50(s,2H) 6.95(s,3H) 7.35(t,1H) 7.55(s,1H) 7.88(s,1H)
27		257-259	CF_3COOD 4.15+4.17(2s,8H) 4.50(s,2H) 7.10(d,1H) 7.40(m,4H) 8.00(d,1H) 8.25(s,1H)
28		239-241	CF_3COOD 3.70(s,3H) 4.10(s,8H) 4.50(s,2H) 6.90(d,2H) 7.30(d,2H) 7.40(d,1H) 8.00(s,1H) 8.10(d,1H)
29		>265	CF_3COOD 4.15(s,8H) 4.55(s,2H) 7.40(s+d,5H) 8.00(s,1H) 8.15(d,1H)
30		199-201	CF_3COOD 3.85(s,3H) 4.30(s,8H) 4.65(s,2H) 7.15(m,3H) 7.55(m,2H) 8.15(s,1H) 8.30(d,1H)

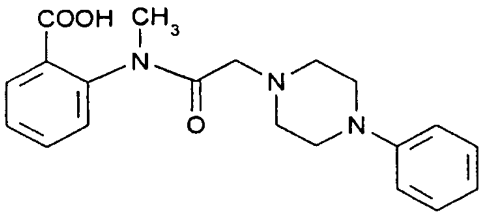
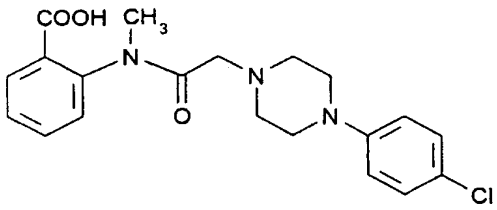
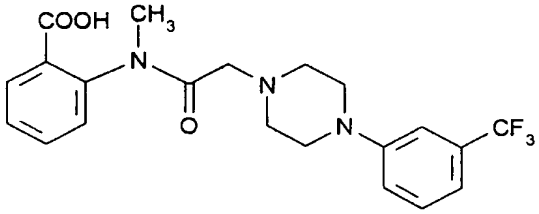
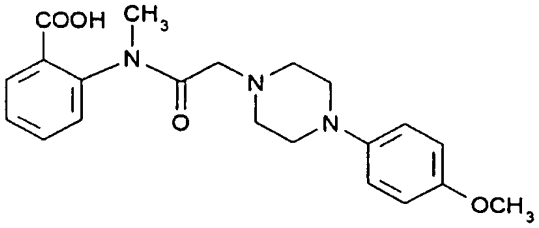
Com-pound	Structure	M.p. in °C (Köfler)	^{1}H NMR (200 MHZ) δ ppm
31		262-264	CF_3COOD 4.30+4.50(2s,8H) 4.67(s,2H) 7.30(m,2H) 7.65(m,3H) 8.15(s,1H) 8.25(d,1H)
32		245-247	CF_3COOD 4.05(s,8H) 4.40(s,2H) 7.05(t,2H) 7.40(d,3H) 7.90(s,1H) 8.05(d,1H)
33		213-215	CF_3COOD 4.25+4.40(2s,8H) 4.70(s,2H) 7.55(d,1H) 7.80(m,4H) 8.15(s,1H) 8.25(d,1H)
34		203-205	CF_3COOD 3.80(s,3H) 4.20(s,8H) 4.45(s,2H) 6.95(d,2H) 7.42(q,3H) 8.05(s+d,2H)
35		224-226	CF_3COOD 4.10(s,8H) 4.45(s,2H) 7.40(m,5H) 7.95(s,1H) 8.10(d,1H)

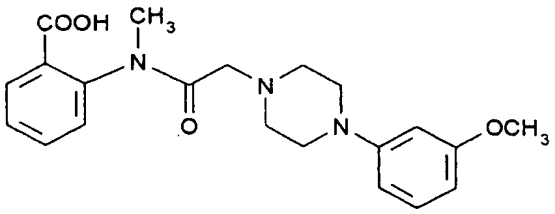
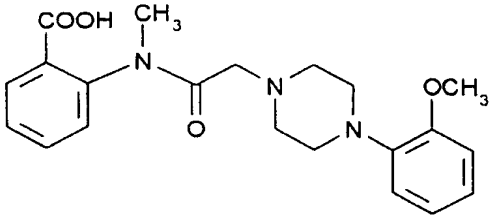
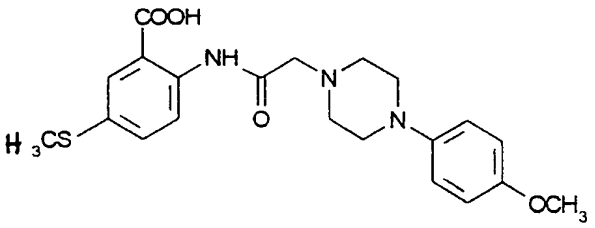
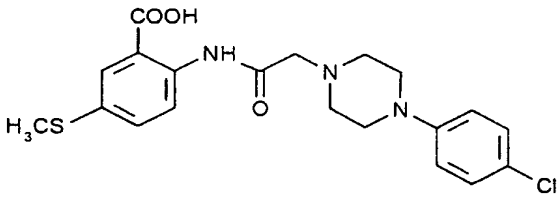
Com-pound	Structure	M.p. in °C (Köfler)	^{1}H NMR (200 MHZ) δ ppm
36		238-240	CF_3COOD 4.20(s,8H) 4.50(s,2H) 5.85(s,2H) 7.45(s,6H) 7.80(s,1H)
37		254-256	CF_3COOD 4.40(s,8H) 4.67(s,2H) 6.05(s,2H) 7.30(t,2H) 7.65(m,3H) 7.90(s,1H)
38		>265	CF_3COOD 4.22(s,8H) 4.57(s,2H) 5.92(s,2H) 7.52(s,5H) 7.80(s,1H)
39		236-238	CF_3COOD 3.83(s,3H) 4.25(s,8H) 4.59(s,2H) 6.0(s,2H) 7.13(d,2H) 7.49(t,3H) 7.82(s,1H)
40		257-259	CF_3COOD 3.97(s,3H) 4.29(s,8H) 4.59(s,2H) 6.06(s,2H) 7.15(d,2H) 7.55(s,3H) 7.82(s,1H)

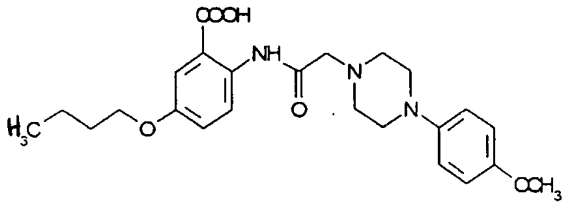
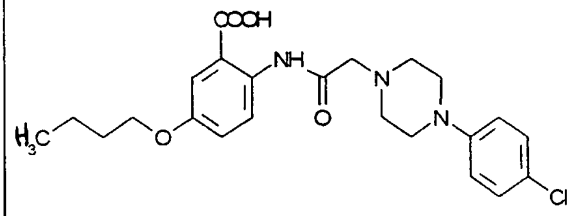
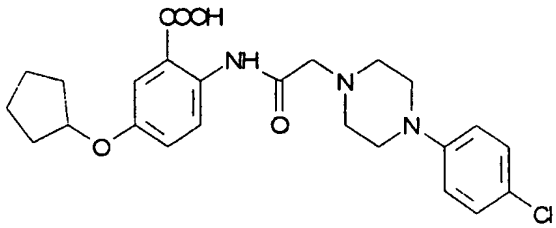
Com-pound	Structure	M.p. in °C (Köfler)	^{1}H NMR (200 MHZ) δ ppm
41		236-238	CF_3COOD 4.23+4.38(2s,8H) 4.56(s,2H) 5.97(s,2H) 7.31(m,2H) 7.55(m,3H) 7.76(s,1H)
42		228-230	CF_3COOD 4.05+4.15(2s,8H) 4.35(s,2H) 5.75(s,2H) 7.30(s,1H) 7.60(m,5H)
43		240-242	CF_3COOD 4.00(s,8H) 4.37(s,2H) 5.75(s,2H) 7.35(d,5H) 7.70(s,1H)
44		198-200	CF_3COOD 3.55(s,3H) 4.00(s,8H) 4.30(s,2H) 5.71(s,2H) 6.85(s,3H) 7.25(s,2H) 7.60(s,1H)
45		188-190	CF_3COOD 4.05(s,3H) 4.42(s,8H) 4.78(s,2H) 7.45(d,1H) 7.72(s,5H) 7.93(s,1H) 8.30(d,1H)

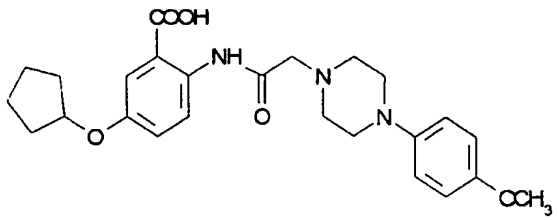
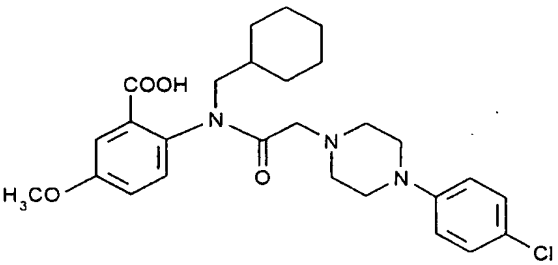
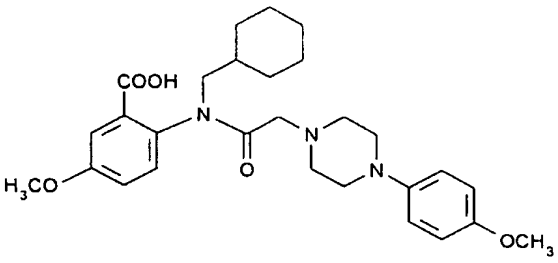
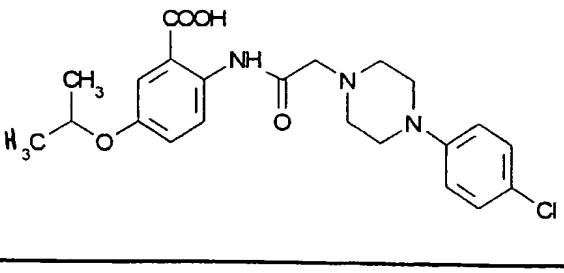
Com-pound	Structure	M.p. in °C (Köfler)	^{1}H NMR (200 MHz)
46		197-199	CF_3COOD 3.75(s,3H) 4.20(s,8H) 4.50(s,2H) 7.10(m,3H) 7.50(t,2H) 7.70(s,1H) 8.05(d,1H)
47		221-223	CF_3COOD 3.80(s,3H) 4.20(s,8H) 4.55(s,2H) 7.15(d,1H) 7.40(s,4H) 7.70(s,1H) 8.00(d,1H)
48		198-200	CF_3COOD 3.85(d,6H) 4.25(s,8H) 4.75(s,2H) 7.22(s,2H) 7.40(s,1H) 7.58(s,2H) 7.82(s,1H) 8.20(s,1H)
49		171-173	CF_3COOD 3.75(s,3H) 4.15(s,8H) 4.50(s,2H) 7.15(s,1H) 7.70(d,5H) 8.05(s,1H)

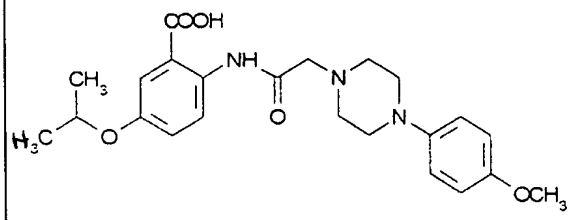
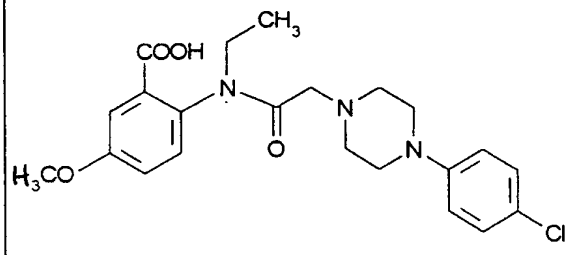
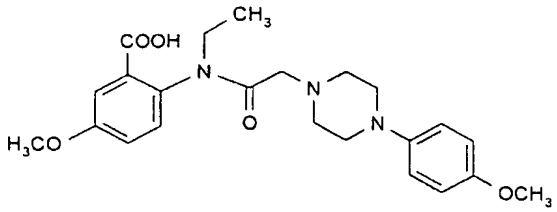
Com-pound	Structure	M.p. in °C (Köfler)	^{1}H NMR (200 MHz)
50		200-202	CF_3COOD 3.65(s,3H) 3.70(s,3H) 4.12(s,8H) 4.42(s,2H) 7.00(d,2H) 7.10(d,1H) 7.40(m,2H) 7.65(s,1H) 8.00(d,1H)
51		179-181	CF_3COOD 3.72(s,3H) 4.25(d,8H) 4.50(s,2H) 7.15(m,3H) 7.50(q,2H) 7.65(d,1H) 8.00(d,1H)
52		177-179	CF_3COOD 3.88(s,3H) 3.96(s,3H) 4.34(s,8H) 4.72(s,2H) 7.20(m,1H) 7.39(dd,1H) 7.62(m,1H) 7.88(s,1H) 8.22(d,3H)
53		182-184	CF_3COOD 3.95(s,3H) 4.40(s,8H) 4.70(s,2H) 7.30(d,1H) 7.60(m,3H) 7.85(s,1H) 8.25(d,1H)

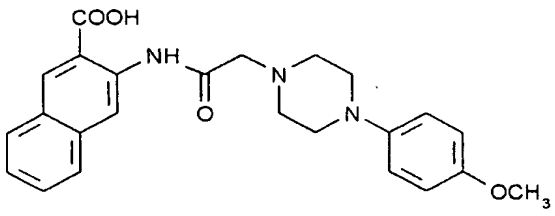
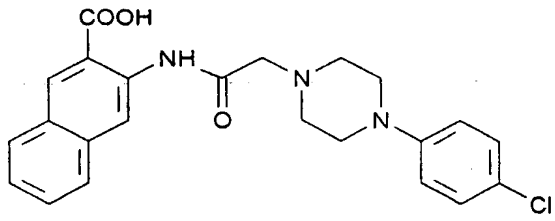
Com-pound	Structure	M.p. in °C (Köfler)	^{1}H NMR (200 MHz)
54		210-212	d_6-DMSO 2.42(d,4H) 2.90(s,2H) 3.10(s,4H) 3.18(s,3H) 6.80(t,1H) 6.93(d,2H) 7.25(t,2H) 7.50(m,2H) 7.70(t,1H) 8.00(d,1H)
55		226-227	d_6-DMSO 2.34(d,4H) 2.81(s,2H) 3.00+3.10(2s,7H) 6.93(d,2H) 7.22(d,2H) 7.47(m,2H) 7.70(d,1H) 7.95(d,1H)
56		193-195	d_6-DMSO 2.55(d,4H) 3.03(s,2H) 3.25(d,7H) 7.25(m,3H) 7.60(m,3H) 7.82(t,1H) 8.12(d,1H)
57		208-210	d_6-DMSO 2.55(s,4H) 3.00(d,6H) 3.25(s,3H) 3.80(s,3H) 7.00(s,4H) 7.65(m,2H) 7.82(d,1H) 8.10(d,1H)

Com-pound	Structure	M.p. in °C (Köfler)	^{1}H NMR (200 MHz)
58		196-198	d_6-DMSO 2.15(s,4H) 2.65(s,2H) 2.80(s,4H) 2.90(s,3H) 3.55(s,3H) 6.20(t,3H) 6.85(t,1H) 7.25(m,2H) 7.50(d,1H) 7.75(d,1H)
59		144-145	d_6-DMSO 2.55(s,4H) 2.95(s,6H) 3.20(s,3H) 3.90(s,3H) 7.00(d,4H) 7.60(m,2H) 7.80(d,1H) 8.10(d,1H)
60		189-191	CF_3COOD 2.38(s,3H) 3.77(s,3H) 4.22(s,8H) 4.60(s,2H) 7.05(d,2H) 7.50(d,3H) 8.07(s,1H) 8.15(d,1H)
61		214-216	d_6-DMSO 2.50(s,3H) 2.83(s,4H) 3.39(2s,6H) 7.05(d,2H) 7.43(d,2H) 7.66(dd,1H) 7.96(s,1H) 8.79(d,2H) 12.20(s,1H) 13.80(s,1H)

Com-pound	Structure	M.p. in °C (Köfler)	^{1}H NMR (200 MHz)
62		167-169	d_6-DMSO 0.75(t,3H) 1.24(m,2H) 1.58(q,2H) 2.52(s,4H) 2.94(s,6H) 3.50(s,3H) 3.81(t,2H) 6.71(q,4H) 7.05(dd,1H) 7.28(s,1H) 8.45(d,1H) 11.77(s,1H) 13.43(s,1H)
63		159-161	d_6-DMSO 0.83(t,3H) 1.32(m,2H) 1.58(q,2H) 2.60(s,4H) 3.16+3.32(2s,6H) 3.88(t,2H) 6.87(d,2H) 7.10(d,3H) 7.35(d,1H) 8.60(d,1H) 11.81(s,1H) 13.50(s,1H)
64		187-189	d_6-DMSO 1.62(m,8H) 2.64(s,4H) 3.20+3.28(2s,6H) 4.75(s,1H) 6.86(d,2H) 7.13(m,3H) 7.39(s,1H) 8.56(d,1H) 10.15(s,1H)

Com-pound	Structure	M.p. in °C (Köfler)	^{1}H NMR (200 MHz)
65		171-173	d_6-DMSO 1.51(m,8H) 2.52(s,4H) 2.98(s,6H) 3.50(s,3H) 4.60(s,1H) 6.60(q,4H) 6.98(dd,1H) 7.28(s,1H) 8.45(d,1H) 11.77(s,1H) 13.43(s,1H)
66		236-238	d_6-DMSO 1.35(m,11H) 2.56(s,4H) 2.84(m,3H) 3.12(s,4H) 4.90(s+m,4H) 6.92(d,2H) 7.28(m,4H) 7.46(d,1H)
67		209-211	d_6-DMSO 1.00(m,5H) 1.66(m,6H) 2.49(s,4H) 2.90(m,7H) 3.73(s,3H) 3.85(s+m,4H) 6.83(q,4H) 7.24(q,2H) 7.40(s,1H)
68		218-220	d_6-DMSO 1.54(d,6H) 3.00(s,4H) 3.50(s,6H) 4.67(m,1H) 7.05(d,2H) 7.35(d,3H) 7.74(d,1H) 8.98(s,1H) 12.00(s,1H)

Com-pound	Structure	M.p. in °C (Köfler)	^{1}H NMR (200 MHz)
69		132-134	d_6-DMSO 1.20(d,6H) 2.79(s,4H) 3.13(s,4H) 3.20(s,2H) 3.62(s,3H) 4.37(m,1H) 4.94(s,1H) 6.60(d,2H) 6.79(d,2H) 7.00(dd,1H) 7.43(s,1H) 8.56(d,1H) 11.88(s,1H)
70		161-163	d_6-DMSO 1.05(t,3H) 2.50(s,4H) 3.00(s,2H) 3.20(s,5H) 3.92(m+s,4H) 6.94(d,2H) 7.28(m,4H) 7.47(s,1H) 13.62(s large,1H)
71		150-152	CF_3COOD 3.58 s, 3.79 s, 3.92 m, 18H 6.83(d,2H) 7.10(s,2H) 7.28(d,2H) 7.58(s,1H)

Com-pound	Structure	M.p. in °C (Köfler)	^{1}H NMR (200 MHz)
72		261-263	CF_3COOD 3.90(s,3H) 4.41(s,8H) 4.75(s,2H) 7.13(d,2H) 7.45(m,4H) 7.88(m,2H) 8.64(s,1H) 8.90(s,1H)
73		> 265	CF_3COOD 4.40(s,8H) 4.77(s,2H) 7.67(s+m,6H) 7.92(m,2H) 8.68(s,1H) 8.92(s,1H)

Results of the pharmacological studies will be given hereinbelow.

Study of the anti-diabetic activity in the NOSTZ rat

The anti-diabetic activity of the compounds of formula (I) by the oral route was determined with respect to an experimental model of non-insulin-dependent diabetes induced in the rat by streptozotocin.

The non-insulin-dependent diabetes model is obtained in the rat by a neonatal (the day of birth) injection of streptozotocin.

The diabetic rats used are 8 weeks old. The animals are kept, from the day of their birth to the day of the experiment, in an animal house at a temperature regulated from 21 to 22°C and subject to a fixed cycle of light (from 7 h to 19 h) and of darkness (from 19 h to 7 h). Their feeding consisted of a maintenance diet, water and food was supplied "ad libitum", except for fasting for 2 hours before the test when the food is withdrawn (post-absorptive state).

30

The rats are treated orally during the day with the test product. Two hours after the final administration of the product and 30 minutes after anaesthetizing the animals with sodium pentobarbital (Nembutal®), a 300 µl blood sample is taken from the end of the tail.

The main results obtained are combined in Table IV. These results show the effectiveness of the compounds of formula (I) in decreasing glycaemia in the diabetic animals.

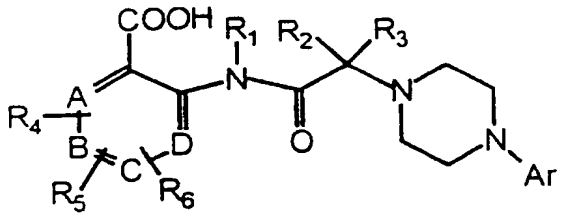
These results are expressed as percentage of change in glycaemia at D4 (4 days of treatment) in comparison with D0 (before treatment).

TABLE IV

Compound	20 mg/kg/d	200 mg/kg/d
	% Glycaemia at D4	% Glycaemia at D4
35	-12	-16
38	-6	-27
39	-15	-14
45	-9	-18
47	-16	-32
48	-20	-31
50	-17	-7
52	-14	-21

CLAIMS

1. A compound selected from the compounds of the formula (I):



(I)

in which:

Ar is selected from

- mono-, bi- or tricyclic aryl having from 6 to 14 carbon atoms,

- a heteroaromatic group selected from the pyridyl, pyrimidinyl, pyrrolyl, furyl, thienyl, quinolyl, indolyl, benzothienyl, benzofuryl, benzopyranyl, benzothiopyranyl, dibenzofuryl, carbazolyl and benzothiazinyl groups,

it being possible for the Ar group to carry 1 to 3 substituents selected from C_1-C_8 alkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, C_1-C_8 alkoxy, (C_3-C_8)cycloalkyloxy(C_1-C_6)alkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkoxy(C_1-C_6)alkyl, (C_3-C_8)cycloalkyloxy, (C_3-C_8)cycloalkyl(C_1-C_6)alkoxy, (C_1-C_6)alkoxy(C_1-C_6)alkyl, C_6-C_{14} aryl, C_6-C_{14} heteroaryl, (C_6-C_{14})heteroaryl(C_1-C_6)alkyl, (C_6-C_{14})aryl(C_1-C_6)alkyl, (C_6-C_{14})aryl(C_1-C_6)alkyl(C_6-C_{14})aryl, (C_6-C_{14})aryloxy, (C_6-C_{14})aryloxy(C_1-C_6)alkyl, (C_6-C_{14})aryl(C_1-C_6)alkyloxy, (C_6-C_{14})aryl(C_1-C_6)alkyloxy(C_1-C_6)alkyl, halogen, trifluoromethyl, trifluoromethoxy, cyano, hydroxy, nitro, amino, carboxy, (C_1-C_6)alkoxycarbonyl, carbamoyl, (C_1-C_8)alkylthio, (C_1-C_8)alkylsulphinyl, (C_1-C_8)alkylsulphonyl, sulphoamino, (C_1-C_8)alkylsulphonylamino, sulphamoyl and (C_1-C_8)alkylcarbonylamino, or two of these substituents forming methylenedioxy,

4-carboxyphenyl and substituted 4-carboxyphenyl being excluded from the definition of Ar,

R_1, R_2 and R_3 are selected, independently of one another, from:

- hydrogen,

- C_1-C_8 alkyl, (C_1-C_6)alkoxy(C_1-C_6)alkyl group,

- cycloalkyl containing from 3 to 8 carbon atoms,(C_3-C_8)cycloalkyl(C_1-C_6)alkyl,(C_3-C_8)cycloalkyloxy- (C_1-C_6)alkyl and (C_3-C_8)cycloalkyl(C_1-C_6)alkoxy(C_1-C_6)- alkyl,

- C_6-C_{14} aryl, C_6-C_{14} heteroaryl, (C_6-C_{14})heteroaryl(C_1-C_6)alkyl, (C_6-C_{14})aryl(C_1-C_6)alkyl, (C_6-C_{14})aryl(C_1-C_6)alkyl(C_6-C_{14})aryl, (C_6-C_{14})aryl(C_1-C_6)-alkoxy(C_1-C_6)alkyl and (C_6-C_{14})aryloxy(C_1-C_6)alkyl,

A, B, C and D are =CH- groups, it being possible for one or two of them also to be a nitrogen atom,

R_4, R_5 and R_6 are selected, independently of one another, from:

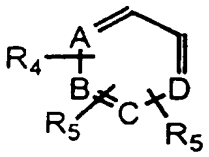
- hydrogen,

- C_1-C_8 alkyl, (C_3-C_8)cycloalkyl(C_1-C_6)alkyl, C_1-C_8 alkoxy, (C_3-C_8)cycloalkyloxy(C_1-C_6)alkyl, (C_3-C_8)cycloalkyloxy, (C_3-C_8)cycloalkyl(C_1-C_6)alkoxy, (C_3-C_8)cycloalkyl(C_1-C_6)alkoxy(C_1-C_6)alkyl, (C_1-C_6)alkoxy(C_1-C_6)alkyl, C_6-C_{14} aryl, (C_6-C_{14})aryl(C_1-C_6)alkyl, (C_6-C_{14})aryl(C_1-C_6)alkyl(C_6-C_{14})aryl, (C_6-C_{14})aryloxy, (C_6-C_{14})aryloxy(C_1-C_6)alkyl, (C_6-C_{14})aryl(C_1-C_6)alkoxy, (C_6-C_{14})aryl(C_1-C_6)alkyloxy(C_1-C_6)alkyl, halogen, trifluoro- methyl, trifluoromethoxy, cyano, carboxyl, hydroxyl, nitro, amino, (C_1-C_6)alkoxycarbonyl, carbamoyl, (C_1-C_6)alkylthio, (C_1-C_8)alkylsulphinyl, (C_1-C_8)alkylsulphonyl, sulphoamino, (C_1-C_8)alkylsulphonylamino, sulphamoyl and (C_1-C_8)alkylcarbonylamino, it being possible for two of these groups to form methylenedioxy or phenyl ring condensed with the ring to which they are attached,

it being possible for the various aryl groups to be themselves substituted by 1 to 3 substituents selected from C_1-C_8 alkyl, C_1-C_8 alkoxy, halogen, trifluoromethyl, trifluoromethoxy, hydroxyl, nitro and amino,

their solvates and their pharmaceutically acceptable salts.

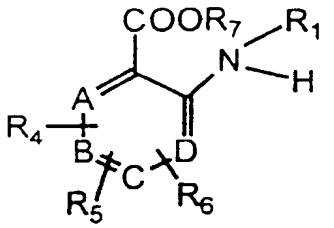
2. A compound as claimed in Claim 1, in which the base component of the ring system



is a phenyl ring.

3. A compound as claimed in Claim 2, in which at least one of the R_4, R_5 and R_6 groups is C_1-C_8 alkoxy or two of these groups form methylenedioxy.

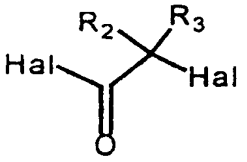
4. A process for the preparation of a compound according to Claim 1, comprising the reaction of an aromatic amine of the formula (II):



(II)

in which A, B, C, D, R_1, R_4, R_5 and R_6 are as defined above and R_7 is selected from hydrogen, C_1-C_6 alkyl and benzyl,

with a haloacyl halide of the formula (III):

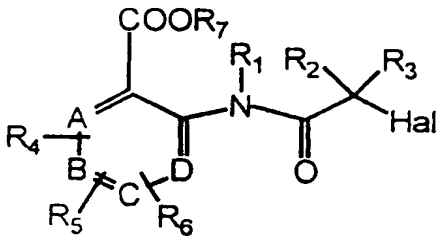


(III)

in which R_2 and R_3 are as defined above,

Hal is selected from chlorine and bromine,

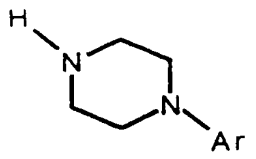
in order to form a compound of the formula (IV):



(IV)

in which A, B, C, D, R_1, R_2, R_3, R_4, R_5, R_6, R_7 and Hal are as defined above,

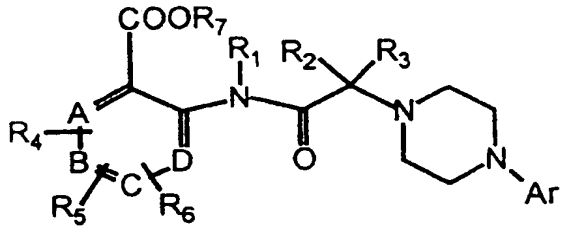
and the reaction of the compound of the formula (IV) with a compound of the formula (V):



(V)

in which Ar is as defined above,

in the presence of a basic agent, in order to form the compound of the formula (VI):



(VI)

in which Ar, A, B, C, D, R_1, R_2, R_3, R_4, R_5, R_6 and R_7 are as defined above,

and, in the case where R_7 is alkyl, the hydrolysis of this compound in order to form a compound of formula (I),

and, in the case where R_7 is benzyl, the hydrogenolysis of this compound in order to form a compound of formula (I).

5. A pharmaceutical composition comprising an effective amount of a compound as claimed in Claim 1.

6. A pharmaceutical composition comprising an effective amount of a compound as claimed in Claim 2.

7. A pharmaceutical composition comprising an effective amount of a compound as claimed in Claim 3.

8. A method for the treatment of diabetes which comprises administering to a human in need thereof an effective amount of a compound as claimed in Claim 1.

9. A method for the treatment of diabetes which comprises administering to a human in need thereof an effective amount of a compound as claimed in Claim 2.

10. A method for the treatment of diabetes which comprises administering to a human in need thereof an effective amount of a compound as claimed in Claim 3.

INTERNATIONAL SEARCH REPORT

Inte I Application No
PCT/EP 98/03431

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 C07D295/15 A61K31/495

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 C07D A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	WO 98 27078 A (MERCK PATENT GMBH) 25 June 1998 see claims 1-4 ---	1-10
A	FR 2 693 722 A (LES LABORATOIRES MERAM S.A.) 21 January 1994 see claims 1-9 ---	1-10
A	EP 0 638 568 A (ADIR ET COMPAGNIE) 15 February 1995 see claims 1-13 ---	1-10
A	BE 850 709 A (LABORATOIRE L. LAFON) 16 May 1977 see claims 1-3 ---	1-10
	-/--	

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

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"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
29 January 1999	05/02/1999

Name and mailing address of the ISA	Authorized officer
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INTERNATIONAL SEARCH REPORT

Inte ! Application No
PCT/EP 98/03431

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
A	WO 96 26924 A (SUNTORY LTD.) 12 February 1997 see claims 1-13	1-10

1

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

information on patent family members

Inte | Application No
PCT/EP 98/03431

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9827078 A	25-06-1998	FR 2757158 A	19-06-1998
		AU 5758298 A	15-07-1998
FR 2693722 A	21-01-1994	AU 4573793 A	14-02-1994
		CA 2140229 A	03-02-1994
		EP 0649419 A	26-04-1995
		WO 9402473 A	03-02-1994
		JP 8501285 T	13-02-1996
EP 638568 A	15-02-1995	FR 2707984 A	27-01-1995
		AT 143955 T	15-10-1996
		AU 674759 B	09-01-1997
		AU 6860594 A	02-02-1995
		CA 2128560 A	24-01-1995
		DE 69400692 D	14-11-1996
		DE 69400692 T	07-05-1997
		DK 638568 T	24-03-1997
		ES 2095726 T	16-02-1997
		GR 3021770 T	28-02-1997
		HK 56697 A	09-05-1997
		JP 7053548 A	28-02-1995
		NZ 264062 A	27-04-1995
		US 5492912 A	20-02-1996
		US 5500426 A	19-03-1996
		ZA 9405423 A	01-03-1995
BE 850709 A	16-05-1977	FR 2346011 A	28-10-1977
WO 9626924 A	06-09-1996	AU 695633 B	20-08-1998
		AU 4843096 A	18-09-1996
		CA 2188924 A	06-09-1996
		EP 0757986 A	12-02-1997
		HU 9602977 A	28-08-1997
		US 5723475 A	03-03-1998